UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
CORPUS CHRISTI DIVISION

JOSE HERNANDEZ, AS NEXT FRIEND OF AN INCAPACITATED ADULT, IRMA HERNANDEZ	*	
	*	CIVIL ACTION NO.
Plaintiff	*	C-04-319
VS.	*	
FORD MOTOR COMPANY, Defendant	*	(JURY DEMANDED)

PLAINTIFF'S OPPOSED MOTION TO EXCLUDE THE STATISTICAL TESTIMONY AND EVIDENCE OFFERED BY FORD MOTOR COMPANY'S EXPERT, MICHELLE VOGLER

TO THE HONORABLE UNITED STATES DISTRICT JUDGE:

COMES NOW, Jose Hernandez, As Next Friend of an incapacitated adult, Irma Hernandez, and files this Plaintiff's Opposed Motion to Exclude the Statistical Testimony and Evidence offered by Ford Motor Company's expert, Michelle Vogler, and in support thereof would respectfully offer the following:

FACTUAL BACKGROUND

1. Plaintiff has brought suit against Ford Motor Company to recover for personal injury damages for the permanent brain injury sustained by Irma Hernandez, which occurred when her 1996 Ford Explorer was involved in a single vehicle rollover accident. Plaintiffs have alleged that the roof structure of the Ford Explorer was defective in its design and manufacture and further that the vehicle suffered from handling and stability defects, which made the vehicle suffer from a propensity to rollover.

2. Ford denies these claims and argues that the alleged defects in the vehicle did not cause Ms. Hernandez' head injury. In its defense, Ford intends to call Michelle Vogler, Ph.D. to testify that statistically the risk to passengers of the 1996 Ford Explorer is comparable to or below the risk to consumers and any other type of vehicles under varying conditions.[1] Ms. Vogler's opinions should be excluded for three reasons.

3. First, Ms. Vogler is not qualified to offer statistical opinions. She is a mechanical engineer and not a statistician. She has never worked as a statistician outside of litigation. Moreover, she has not published any peer-reviewed articles on the methodology she employs for her comparative risk analysis, nor has she offered any specific peer-reviewed literature supporting the use of her comparative risk analysis in this case.

4. Second, Ms. Vogler does not relate her comparative risk analysis to any issue to be decided in this case by the jury. In her report, she offers no opinions regarding the cause of the collision, the cause of Irma Hernandez' brain injury, the design of the vehicle in question, the negligence of any party or any other claim or defense in this case.[2] Therefore, Ms. Vogler's opinions are completely irrelevant to this case.

5. Finally, Ms. Vogler does not provide any foundation for her opinions as required by the Federal Rules of Evidence 705. Ms. Vogler, according to her report, bases her opinions on computerized accident data from four state databases as well as two federal databases. However, she fails to identify with specificity the underlying data, which she uses to reach her opinions. As a result, Ms. Vogler cannot lay a foundation for any of the conclusions in her report. Further, Ms. Vogler's report reflects that her opinions are based upon generalized data from different State and Federal databases from which

[1] See Ms. Vogler's report and curriculum vitae attached hereto as Exhibit A.

her calculations are based on fatal accidents (Miss Hernandez was not fatally injured and thus, Ms. Vogler's opinions are not based on a solid foundation).

LEGAL ARGUMENT AND AUTHORITIES

Ms. Vogler is not qualified to offer expert statistical opinions

6. Fed. Rule Civ. P. 702 permits a witness qualified as an expert by virtue of knowledge, skill, experience, training or education to offer opinion testimony of a scientific, technical or specialized nature if the testimony will assist the trier of fact in determining an issue in this case.

7. Ms. Vogler is not qualified to testify, as she is merely a mechanical engineer by education, training and experience.[3] The only reference to any statistical experience in her curriculum vitae is a conclusory statement listing two graduate courses in statistics and her membership in a statistical association.

8. Although Plaintiff does not dispute her qualifications as a mechanical engineer, Ms. Vogler should be precluded from testifying on the risk analysis matters in her report pursuant to Fed. Rule Civ. P., 702. *See* also *Daubert v. Merrell Dow Phrms. Inc.*, 509 U.S. 579, 113 S.Ct. 2786 (1993) and *Kumho Tire Co. v. Carmichael*, 526 US 137, 119 S.Ct. 1167 (1999).

Ms. Vogler's risk analysis is not relevant to any issue in this case

9. This case involves whether Ford negligently designed, tested and marketed the 1996 Ford Explorer in question and whether or not such defect was a producing cause of Ms. Hernandez' brain injury. Ms. Vogler's statistical tabulations are not relevant to any issue in this case. As stated previously, Ms. Vogler's report confirms that her opinion does not relate to: (1) the accident; (2) the cause of the accident; (3) the responsibility of the accident; (4) the alleged negligence of any of the parties in this case;

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[2] See report of Michelle Vogler attached hereto as Exhibit A.

(5) the design of the vehicle in the accident; (6) the technological or economical feasibility of safer alternative designs; (7) whether alternative designs either prevented or minimized the risk to Irma Hernandez; or, (8) whether Ford's actions were malicious.

10. Alternatively, Ms. Vogler is attempting to offer a comparative risk analysis of the passengers of the 1996 Explorer to drivers and passengers of other vehicles, irrespective of the differences in the vehicles designs or the circumstances of the accident. But the risks in general to drivers or passengers of dissimilar vehicles involved in dissimilar accidents are not relevant to any issue in this case. Therefore, Ms. Vogler's opinions should be excluded.

Ms. Vogler's statistical data does not satisfy a substantial similarity test

11. Evidence relating to other incidents or accidents may be admissible in a products liability case, but there must be a showing of substantial similarity of the vehicle and the incident to the subject case. *See, e.g., Nissan Motor Ltd. v. Armstrong*, 145 S.W.3d 131 (Tex. 2004). The rationale underlying the required showing of "substantial similarity" is that the jury is being invited to infer from the results of the other accidents a conclusion about the crash performance of the 1996 Explorer and the accident involved in this case. But the only reference to those other accidents is a statistical compilation, which ignores the material differences in the designs of the different vehicles or the conditions of the other accidents. The conclusions therefore, by the research are highly misleading.

The use of Ms. Vogler's testimony is barred by Tex. Rule Civ. P. 403

12. The Federal Rules of Civil Procedure require the Court to balance the issues of relevance and reliability against the risk of undue prejudice, confusion of the issues, misleading of the jury or unnecessary expenditure of the Court's time. Any probative

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[3] See Ms. Vogler's CV attached hereto as Exhibit A.

value contained in Ms. Vogler's opinions is clearly outweighed by the prejudicial effect they may have on the jury's deliberations.

WHEREFORE, PREMISES CONSIDERED, Plaintiff, Jose Hernandez, As Next Friend of an incapacitated adult, Irma Hernandez, respectfully requests the Court to enter an order excluding the opinions and evidence of Michelle Vogler in this case and for any and all such further relief to which Plaintiff may show himself to be justly entitled.

Respectfully submitted,

SICO, WHITE & BRAUGH, L.L.P.
Brantley W. White
900 Frost Bank Plaza
802 N. Carancahua
Corpus Christi, Texas 78470
Phone: (361) 653-3300
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By: _____

BRANTLEY W. WHITE
ATTORNEY IN CHARGE
FOR PLAINTIFFS
State Bar No. 00789722
Federal Id. No. 22400

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing instrument was forwarded by the method of service indicated below to the attorneys listed below on this the 4 day of January, 2005.

Brantley W. White by Roger Hood per permission

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED:

John W. Chambless
Ronald D. Wamsted
BROWN McCARROLL, L.L.P.
111 Congress Avenue, Suite 1400
Austin, Texas 78701

DESIGN RESEARCH ENGINEERING
46475 Desoto Court
Novi, Michigan 48377
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November 30, 2004

Gerald F. Giordano, Jr., Esquire
Snell & Wilmer
One South Church Avenue
Suite 1500
Tucson, Arizona 85701-1630

RE: Hernandez, Jose v. Ford Motor Company

Dear Mr. Giordano:

At your request, I have prepared the following preliminary report summarizing analytical results and my opinions concerning the case referenced above. At this time I have formed several conclusions based on the researched data discussed below, general and case specific material review, and my education, background, and experience in data analysis, automotive design/testing, and field accident investigation.

My background and qualifications are provided on my attached curriculum vitae (Attachment 1). Briefly, I hold a Ph.D. in Mechanical Engineering from Stanford University and I am a registered Professional Engineer in the States of California and Michigan. My educational background includes advanced courses in mathematics and statistics. Further, applied statistics and statistical reasoning underlies much of the empirical and applied engineering studies associated with my undergraduate, graduate, and Ph.D. course work and dissertation research. During my professional work experience, I have routinely performed and relied on statistical studies as a method to evaluate material characteristics and product field performance. My evaluation of the field performance and risks associated with the 1995-2001 Ford Explorer has involved the application of standard descriptive and regression statistics.

Accident Information

The vehicle involved in the subject case was a 1996 Ford Explorer 4x4 (VIN: 1FMDU32X5TZA00556). The accident occurred on January 24, 2004, at 3:38 p.m. on Highway 6 (Earl Rudder Freeway) in Brazos County, Texas. The posted speed limit at the time of the accident was 70 mph. According to the police report, the Explorer was traveling northbound on Highway 6 when the driver (Irma Hernandez) attempted to avoid a Mitsubishi Eclipse that pulled in front of her. Ms. Hernandez input several steering maneuvers (traveling into the median and back onto the road) and the Explorer subsequently rolled over.

EXHIBIT "A"

Hernandez, Irma
1377-003278

Accident Data Sources

In forming my opinions, I have utilized motor vehicle accident databases maintained by several individual states and the National Highway Traffic Safety Administration (NHTSA). In summary, these databases are comprised of many individual police accident reports from the United States as a whole (FARS and NASS/GES) and several states (state data). NHTSA's Fatality Analysis Reporting System (FARS) database is comprised of police reported automobile accidents from across the United States (U.S.) that involved an occupant fatality. NHTSA's National Automotive Sampling System/General Estimates System (NASS/GES) database contains a nationally representative sample from police reported accidents that occur annually in the U.S. The state databases contain police reported automobile accidents that occur in specific states (Alabama, Florida, Maryland, North Carolina, and Pennsylvania). NASS/GES and state data contain all levels of occupant injury severity, including fatalities.

All states use police accident reports to collect information on motor vehicle accidents, although the report format and content varies from state-to-state.[1] Police officers primarily collect report information from direct observation and evidence collected at the scene. As noted in a 1999 report, "Police are unique in their ability to collect on-scene crash data shortly after the crash occurs, as well as the transient data that may erode (i.e., tire marks) or be removed from the scene. In addition, police collect crash data from a wider spectrum of crashes compared with [NHTSA] special investigation teams".[2] Data derived from police accident reports are reasonably relied upon by the federal government and researchers in the field of motor vehicle accident research.

A database does not exist that contains all motor vehicle accidents, both fatal and nonfatal, that occur across the United States. The NASS/GES database contains "...a nationally representative probability sample from all police-reported crashes that occur annually".[3] NHTSA restricted NASS/GES data to police-reported crashes to concentrate on "...those crashes of greatest concern to the highway safety community and the general public".[4] NHTSA utilizes the NASS/GES database to compile the annual "Traffic Safety Facts" publication.

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[1] National Highway Safety Administration, United States Department of Transportation, "State Accident Report Forms Catalog: 1995 Update", DOT HS 808 322, December 1995.
[2] Calspan (Veridian Engineering), "Crash Data Collection, Final Report", prepared for Office of Safety and Traffic Operations R&D, Federal Highway Administration, FHWA-RD-99-052, Contract No. DTFH61-95-C-0007, 1999.
[3] GES Manual, DOT/NHTSA
[4] Ibid

State data is derived from police-reported accidents that include fatalities, injuries, and/or property damage accidents. This study utilizes data from the states of Alabama, Florida, Maryland, North Carolina, and Pennsylvania. These state databases were chosen because they include the Vehicle Identification Number (VIN) that allows for the identification of a vehicle's specific make/model, as well as data elements that include information about the accident, the vehicles, and the people involved. According to NHTSA, state accident data "...is a valuable source of information about the characteristics of the crash, vehicle(s), and persons involved in a crash that can enhance decision making for highway safety, traffic safety and injury control activities."[5] NHTSA uses state data for various studies, including "...Investigating the relative risk of subject and peer vehicles to support NHTSA's defect investigation program."[6] A list of selected published studies utilizing state accident databases is provided in Attachment 2.

The FARS database includes motor vehicle traffic accidents, reported by police officers from across the United States, that result in fatality to a vehicle occupant or non-motorist, within 30 days of the accident. NHTSA developed FARS to "...assist the traffic safety community in identifying traffic safety problems, developing and implementing vehicle and driver countermeasures, and evaluating motor vehicle safety standards and highway safety initiatives... FARS data can be used to answer many questions on the safety of vehicles, drivers, traffic situations, and roadways."[7]

In addition to accident data, an appropriate accident risk assessment requires a measure of exposure. My risk calculations incorporate vehicle exposure data to make accident rates relative to population size during a specific time period. This produces a rate that reflects vehicle risk and allows for the comparison of specific rates among vehicle model groups with different size populations.[8] Vehicle exposure varies among model groups due to variations in the length of production period (model years), varying sales volumes, and usage patterns that may influence a vehicle's useful life. My accident studies used registered vehicle years (RVYs), calculated from annual vehicle registration data compiled by R.L. Polk, as a measure of vehicle exposure. A registered vehicle year is equivalent to a single vehicle registered for one calendar year. Traffic safety researchers employ different methods and sources of data when normalizing accident data for exposure levels. For more then a decade, NHTSA researchers have used registered vehicle data (R.L. Polk data) as an estimate of vehicle exposure, at the make/model level, in numerous reports and regulatory analyses.

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[5] State Data System: A Summary of Motor Vehicle Traffic Crashes from the State Crash Data Files, NHTSA, DOT HS 808 626, 1997, p. 1.
[6] Ibid, p. 8.
[7] U. S. Department of Transportation, National Highway Traffic Safety Administration, "NCSA Databases, Fatal Analysis Reporting System", cited July 2001, http://www.nhtsa.dot.gov/people/ncsa/fars.html
[8] Background information, and related terminology, largely derived from: *Statistical Analysis of Epidemiologic Data* by Steve Selvin, New York: Oxford University Press, 1996.

Risk Analyses – Methodology

The statistical evidence prepared in this case is based on a systematic application of reliable, reproducible scientific methods that are well accepted in the field of motor vehicle accident and injury risk analysis. These generally accepted methods involve many inter-related components: the population under study, time frame, and analytical methodology.[9] These applied methods are a set of logical steps that include formulating research issues and hypotheses, identifying quantitative indicators, and collecting/processing and analyzing data in a consistent and systematic manner.[10] A detailed description of key methodologies follows.

Vehicle Identification: The Vehicle Identification Number (VIN)[11] decoding methodology used in these studies is based on sound and reproducible scientific methods using the commercially available software VINDICATOR[12]. Consistent and objective vehicle groupings were developed, by category and model group, using each vehicle's (VIN), in concert with VINDICATOR classifications and relevant industry documentation about the vehicle base design and re-design changes.[13] The two primary commercial VIN decoding programs, VINDICATOR and VINA®,[14] have been in existence for many years. These software programs use a modest digit substitution subroutine, on a vehicle specific basis, to correct VIN transcription errors (e.g., "S" for a "5", "1" for a "I"). VIN decoding for this study also used supplemental substitution routines to maximize utilization of vehicle records while yielding reliable vehicle identification.[15] A list of selected published studies related to vehicle category and model group identification, Vehicle Identification Number (VIN) specifications and analysis is provided in Attachment 3.

Analytical Techniques: Standard analytical techniques were applied to assess the relationship of exposure to risk (e.g.: using a motor vehicle for one year, being an occupant in an accident vehicle) to a specified outcome (e.g.: motor vehicle accident, occupant injury). Vehicle risk assessment uses accident and occupant injury rates as an indicator of field performance for a specific vehicle model group. Analytical methods include (1) calculating accident and occupant injury rates from the above-referenced motor vehicle accident data, and (2) comparing accident and occupant injury rates for a specific model group to other model groups. This comparison includes the calculation of confidence intervals and

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[9] Last, John M., ed., *A Dictionary of Epidemiology, Fourth Edition,* New York: Oxford University Press, 2001, p. 158.

[10] Kaplan, Abraham, *The Conduct of Inquiry*, San Francisco, Chandler, 1964. In McGraw, Dickinson and Watson, George, *Political and Social Inquiry*, New York: Wiley, 1976, p. 4.

[11] Since 1981, the Vehicle Identification Number (VIN) has been a 17-character alphanumeric code.

[12] VINDICATOR can be purchased from the Highway Loss Data Institute (HLDI).

[13] VINDICATOR classifies passenger cars are based on curb weight and overall length and width. Pickup trucks and utility vehicles are classified based on curb weight only.

[14] Vehicle Identification Number Analysis® (VINA®) can be purchased from The Polk Company.

[15] "Enhanced Vehicle Identification in Motor Vehicle Accident Databases" SAE 2004-01-1186

critical ratio (*z* statistic), at the 95 percent confidence level, to determine the statistical significance of any observed differences in risk between different vehicles, and an objective analysis of the observed trends in the risk analyses. Linear regression analyses were also performed, which is a standard statistical technique used for evaluating the predictive value of a variable or set of variables. These techniques have been used and tested by a variety of researchers, including NHTSA and the Insurance Institute of Highway Safety (IIHS). A list of selected published studies utilizing 95 percent confidence level or intervals is provided in Attachment 4.

Risk Assessment: The average rate is a measure of risk over a specific period of time that incorporates both the number of occurrences during that time period and the population at risk during that same period of time. Making a rate relative to population size, during a specific time period, produces a numeric value that reflects risk and allows for the comparison of specific rates among groups with different size populations.[16] Accident rates are calculated by dividing the number of accident involved vehicles (numerator) by the estimated number of vehicles "exposed" to the possibility of being involved in an accident (denominator). Similarly, injury rates are calculated by dividing the number of occupants that sustained fatal or severe injuries in the accidents (numerator) by the number of occupants "exposed" to the possibility of being injured in the accidents (denominator).[17] The numerator data is derived from a count of occurrences in the GES, FARS, or combined state data, depending on the analytical question under study. The denominator data is derived from (1) vehicle exposure data (i.e., RVYs) for accident rates, or (2) count of occupants involved in accidents, from combined state data, for occupant injury rates.

Injury Classification: The KABCO injury scale levels "K–killed" and "A–incapacitating" were used to identify fatal and severe injuries. Guidelines for KABCO injury classification are described in the National Safety Council's "Manual on Classification of Motor Vehicle Traffic Accident, Sixth Edition" and the American National Standard Institute (ANSI).[18] The KABCO scale, as well as other injury scales, has been used by NHTSA and other researchers to evaluate injury issues. A list of selected published studies utilizing KABCO data is provided in Attachment 5.

Comparative Risk Analysis: The principal function of a rate is to provide a measure of risk that can be directly compared among a series of causes or

[16] Background information, and related terminology, largely derived from: *Statistical Analysis of Epidemiologic Data* by Steve Selvin, New York: Oxford University Press, 1996. pp. 2

[17] For the state and NASS/GES datasets, the number of occupant injuries are for occupants sustaining a fatal or incapacitating, or severe, injury, as recorded by the reporting police officer using the KABCO ordinal categorical injury scale (K=killed and A=incapacitating).

[18] National Safety Council, "American National Standard – Manual of Classification of Motor Vehicle Traffic Accidents, Sixth Edition", (ANSI D16.1-1996, Revision of ANSI D16.1-1989), prepared by the National Safety Council, Committee on Motor Vehicle Traffic Accident Classification, under the direction of the Traffic Records Committee of the National Safety Council Highway Traffic Safety Division, 1996.

groups.[19] This comparative risk assessment for a specific make/model includes three analytical components: (1) comparing the specific model group's risk to all other model groups (overall analysis), (2) classifying the specific model group into a vehicle type and comparing the vehicle type's risk to all other vehicle types (between vehicle type analysis), and (3) comparing the specific model group's risk to other model groups within the same vehicle type (within vehicle type analysis). These three types of analyses are integral components of vehicle risk assessment: (a) the overall analysis provides a general perspective, or frame of reference, on a specific model group's risk relative to all other model groups on the road, (b) the second (between vehicle type) analysis provides a relative perspective of the risk for each vehicle type, and (c) the third (within vehicle type) analysis provides a more discrete, or introspective, comparison that helps understand a model group's risk relative to other model groups within the same vehicle type. Comparative risk analysis has been employed by NHTSA and other researchers to evaluate field performance of subject and peer vehicles, specifically in support of NHTSA's defect investigations. [20] A list of selected published studies related to risk calculation and motor vehicle accident studies utilizing comparative vehicle risk is provided in Attachment 6.

Accident Risk Analyses - Results

The NASS/GES data (used to project national accident levels) and registration data were used to determine the yearly risk of involvement in a motor vehicle accident. Results indicate that the risk of involvement in a motor vehicle accident in the year 2001 was approximately 5 percent. The risk of having a rollover accident is less than 1 percent. Furthermore, the risk of having a rollover accident that involves a severe or fatal injury is very low (approximately 0.03 percent). Conversely, this means that the likelihood of not being involved in a rollover accident with a severe or fatal injury is approximately 99.97 percent.

A study was conducted using state databases and the FARS database to establish the comparative risk of rollover accidents for a wide variety of vehicles, including sport utility vehicles, pickups, vans, and passenger cars (approximately 740 different make/models of vehicles). The combined state databases utilized for this study were Alabama, Florida, Maryland, North Carolina, and Pennsylvania. It should be noted that the FARS data, which was used to estimate the risk of being in a motor vehicle accident that results in a fatality (fatal accident risk), is comprised of only fatal accidents (which are not representative[21] of all accidents

[19] Selvin, Steve, *Statistical Analysis of Epidemiologic Data.*, New York: Oxford University Press, 1996. p.7.

[20] State Data System: A Summary of Motor Vehicle Traffic Crashes from the State Crash Data Files, NHTSA, DOT HS 808 626, 1997, p. 1.

[21] When a sample or subset of a population are used as the basis for analysis, "representative" refers to the research assumption that the selected objects under study have approximately the same distribution of the characteristics we are measuring as the population from which it was drawn and want to make inferences. A representative sample is said to provide external validity of the study's findings – meaning that the results can be used to draw conclusions about the characteristics of the population as a whole.

by the very nature of their severity[22]) and has significant limitations for comparing accident involvement risks among different vehicle designs. The substantial limitation is, by definition, that a fatality must occur for the accident to be included in the database. Factors not related to vehicle design (e.g., occupants not wearing a seatbelt significantly increase their risk of fatal/severe injury, and, by logical extension, increase the likelihood that the accident would be included the FARS database) can affect fatal accident risks. In addition, the overall risk of being involved in a fatal accident is extremely rare and, therefore, the difference in the calculated accident involvement risks between vehicles is also extremely small.

Rollover accident risks for any type of vehicle are significantly lower than other modes of accidents (i.e., frontal, side, rear). While infrequent, rollover accidents occur in all types of vehicles (i.e., sport utility vehicles, pickups, vans, and passenger cars). Results indicate that the 1995-2001 Ford Explorer rollover accident risks are comparable to other sport utility vehicles. Further, any observed differences in the calculated rollover accident risks between vehicles are extremely small. The risk of not being in a Ford Explorer rollover accident that results in a severe or fatal injury (based on the combined state database) is approximately 99.96%.

A study of a vehicle's rollover accident risk is only one component of the total risk associated with that vehicle. Frontal, side and rear collisions are much more frequent modes of accidents. Although the rollover risk of sport utility vehicles as a class are higher than passenger cars, sport utility vehicle accident risks (including specifically the 1995-2001 Ford Explorer) are lower than many passenger cars in other modes of collisions.

A combination and/or interaction of accident specific characteristics contribute to whether or not a motor vehicle accident involves a rollover event, including:

- non-crash factors (rural/urban, posted speed limit, driver attributes, vehicle design)
- pre-crash factors (driver condition/behavior, vehicle traveling speed, vehicle component contributing factors, environmental conditions)
- at-crash factors (single vehicle/multiple vehicle, on road/off road)

A study was undertaken using the FARS database to evaluate the effect on the occurrence of rollover events when such factors are present. Results indicate that

[22] NHTSA researchers support this premise. For example, in a 1990 paper, Harwin Brewer (NHTSA) wrote that: "The selection of a database for the statistical study of accidents is a critical first step in the analysis process. This is because the choice of a database may influence or obscure the outcome of the study. For example, the FARS database which consists solely of fatal accidents, is not ideally suited for the analysis of rollover rate, due to the extreme bias of this file toward crashworthiness, e.g.: roof crush, restraint usage, etc. Although the FARS database has been used to estimate rollover rates the results may be questioned for this obvious reason. A more suitable database would be any, or a combination of, the large police automated accident files." See *Harwin, E., Brewer, H., NHTSA "Analysis of the relationship between vehicle rollover stability and rollover risk using NHTSA CARDfile Accident Database", Journal of Traffic Medicine, 1990*

the presence or absence of specific accident characteristics can significantly affect the occurrence of a rollover event regardless of the vehicle type.

It has been alleged that a correlation exists between a "static stability factor" and a rollover occurrence. The "static stability factor" of a vehicle has been defined as the track width divided by twice the height of the center of gravity (i.e., T/2H). A linear regression of this data indicates a low correlation between the factor "T/2H" and accident risks. Comparisons made of accident rollover risks for vehicles with different body styles of the same model as well as vehicles with similar T/2H values demonstrates the inability to use T/2H to predict a vehicle accident rollover risk. In addition, a comparison of vehicles with similar rollover accident risks but different T/2H values demonstrates that applying an acceptance limit criteria to T/2H (such as 1.2 or greater) would eliminate classes of vehicles such as pickup trucks, sport utility vehicles, and small vans, but leave vehicles on the road that pose similar risks of rollover accidents.

Occupant Injury Risk Analyses – Results

Studies were conducted using state databases to establish occupant injury risks. The combined state databases utilized were Florida, Maryland, North Carolina, and Pennsylvania. These state databases are comprised of police reported automobile accidents involving all levels of occupant injury severity, and include a consistent coding of occupant injury severity using the KABCO scale.[23]

State databases were used to determine the fatal/severe occupant injury rates for the 1995-2001 Ford Explorer in comparison to peer vehicles (i.e., sport utility vehicles) as well as other types of vehicles (i.e., pickups, vans, and passenger cars). Results indicate that the Ford Explorer fatal/severe occupant injury rates are comparable to other sport utility vehicles. Also, the Ford Explorer and sport utility vehicles as a class have lower fatal/severe occupant injury risks than other types of vehicles.

These studies were also used to assess the risks of fatal/severe injury associated with seat belt usage. Results consistently indicate that belted occupants have significantly lower risks of fatal/severe injury than unbelted occupants do in all modes of accidents.

The opinions expressed in this report are based on a reasonable degree of engineering certainty and on information currently available. These opinions may be supplemented if further information, data, or analyses become available. Analysis of motor vehicle

[23] Alabama injury data is not included in the state-level injury analyses. Alabama's KABCO definition differs from the other states: the term 'incapacitating' or 'severe' are not used in the description in any manner, and the description of "visible [injury] or carried from scene" allows the inclusion of what other states would consider less than severe or incapacitating (e.g.: "bleeding wound" without mention of extent of blood loss [e.g. NC-"massive loss of blood"] defines categorization as "A" for a less than incapacitating injury).

accident data is continually underway, as data is updated. The most current accident data analysis will be provided at the time of deposition and/or trial.

Design Research Engineering currently charges $280 per hour for my services. I have provided a list of cases in which I have given deposition or trial testimony during the past four years (Attachment 8). Please contact me if you have any questions concerning the above findings.

Respectfully submitted,

Michelle M. Vogler

Michelle M. Vogler, Ph.D., P.E.
Principal Engineer

Attachment 1

MICHELLE M. VOGLER, Ph.D., P.E.

Professional Specialization
Failure analysis/design evaluation of motor vehicle systems, mechanical components, consumer products, and industrial machinery. Accident reconstruction and analysis of accident related issues for motor vehicles and automotive components including body structures, body closures, suspension systems, steering systems, restraint systems, and seating systems. Risk analysis and statistical evaluation of system and component field performance. Design and implementation of mechanical test programs. Fire investigation. Guarding and safety standard issues.

Solid mechanics and stress analysis. Metallurgical evaluation of materials related issues in field applications. Mechanical, thermal, and electrical finite element modeling. Fatigue and fracture mechanics testing/analysis.

Research includes investigation of resistance spot welding process, evaluation of material characteristics based on environmental and loading conditions, and design/development of restraint system for physically disabled individuals with mobility aids.

Professional Background
B.S. (Mechanical Engineering), Michigan State University, 1980
M.S. (Mechanical Engineering), University of Santa Clara, 1985
Ph.D. (Mechanical Engineering/Design Division), Stanford University, 1993
Additional Engineering Courses (Accident Reconstruction, Fatigue, Fracture Mechanics and Applied Testing), Northwestern University Traffic Institute; University of Iowa; University of California, Berkley; Union College of New York
Graduate Statistics Courses (Product Reliability Modeling, Regression Models and Variance Analysis), University of Santa Clara; Stanford University

Principal Engineer,
Design Research Engineering
1996 to Present
Managing Engineer,
Failure Analysis Associates, Inc.
1983-89 Full Time, 1989-92 Part Time, 1993-95 Full Time
Research Assistant, Department of Mechanical Engineering,
Stanford University
1989-91
Test Engineer, Nuclear Energy Division,
General Electric Company
1980-83
Engineer,
Packard Electric, Division of General Motors
1977-78

Member, Society of Automotive Engineers (SAE)
Member, American Welding Society (AWS)
Member, American Society of Mechanical Engineers (ASME)
Member, American Society for Materials (ASM)
Member, American Statistical Association (ASA)
Member, National Safety Council (NSC)

MICHELLE M. VOGLER, Ph.D., P.E.

Professional Licenses
Registered Professional Mechanical Engineer, 1984, California #22720
Registered Professional Engineer, 2000, Michigan #046483

Honors
National Science Foundation, Fellowship (Stanford University)
American Welding Society, Charles H. Jennings Memorial Award for a Significant Contribution to Welding Literature, 1994

Publications
"Enhanced Vehicle Identification in Motor Vehicle Accident Databases," SAE 2004-01-1186 (with B. Moroski-Browne, T. Angelos, and R. Firestone).
"Development of Wheelchair Restraint System," California Department of Transportation, Final Report, Sacramento, California, August 1993.
"Electrical Contact Resistance Under High Loads and Elevated Temperatures," Welding Journal, Vol. 72, No. 6, June 1993 (with S. Sheppard).
"Investigation of Resistance Spot Weld Formation," Ph.D. Thesis, Stanford University, 1992.
"A Study of Temperature Histories in Resistance Spot Welding," Trends in Welding Research International Conference, Gatlinburg, Tennessee, 1992 (with S. Sheppard).
"Contact Resistance Under High Loads and Elevated Temperatures," 26th Annual Technical Meeting, Society of Engineering Science, Ann Arbor, Michigan, 1989 (with S. Sheppard).
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Attachment 7

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Rollover Issues

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Attachment 8
Legal Testimony of Michelle M. Vogler, Ph.D., P.E.
as of October 2004

Case Name	Date of Testimony		State	Court	Case No.
	Deposition	Trial/Hearing			
Smith, Holly v Ford	Oct-04		CA	Superior Court of the State of California for the County of Orange, Central Justice Center	03CC03454
Ellis, Brenda v Ford	Sep-04		TX	District Court of Tarrant County, Texas for the 67th Judicial District	67-197473-03
Mitchell, Patricia v Ford	Sep-04		NJ	Superior Court of New Jersey Law Division Middlesex County	L-5453-02
Frede v Ford	Sep-04		MO	Missouri Circuit Court 22nd Judicial Circuit St Louis City	022-09936
Bowdre v Ford	Sep-04		TX	District Court of Bastrop County, Texas, 21st Judicial District	24-356
Zacarias-Sandoval v Ford	Sep-04		IN	U S District Court for the Southern District of Indiana	IP03C5787B/S
Burry v GM	Aug-04		TX	District Court of Wise County, 271st Judicial District	03-05-383
Graham v Kia	Aug-04	Oct-04	FL	Circuit Court of the 9th Judicial Circuit In and For Orange County, Florida	CI0-005710
Grimes, Donna v Ford	Jul-04		FL	Circuit Court of the 15th Judicial Circuit In and For Palm Beach County, Florida	02-087949 AH
Brewster v Hyundai	May-04		TX	U S District Court for the Eastern District of Texas, Marshall Division	2 03-CV-00184
Gruenloh v DCC	May-04		MO	Circuit Court of Jackson County, Missouri	00CV214262
Thomas, Donald v Ford	Apr-04		FL	Circuit Court of the 15th Judicial Circuit In and For Palm Beach County, Florida	CA 02008857 AH
Frasher v Crown Equipment	Apr-04		IL	Circuit Court of Cook County, Illinois	00 L 008289
Disque v Ford	Mar-04		FL	Circuit Court of the 15th Judicial Circuit In and For Palm Beach County, Florida	CL-01-000219
Pillado v Ford	Mar-04		CA	Superior Court of the State of California for the County of San Bernardino	BCV07014
Vaughn v DCC	Mar-04		KY	Commonwealth of Kentucky Clay Circuit Court	01-CI-00362
Stiren v DCC	Mar-04		MO	Missouri Circuit Court 22nd Judicial Circuit St Louis City	012-00304
Guzman, Francisco v Ford	Feb-04		TX	District Court, Zapata County, Texas	5309
Payne, Leona v Ford	Feb-04		MA	U S District Court, District of Massachusetts	01-12079REK
Montealvo v Ford	Feb-04		GA	Superior Court of Athens-Clarke County, Georgia	SU-99-CV-0690G
Hall-Alverez v Ford	Jan-04		FL	Circuit Court of the Fifteenth Judicial Circuit in and for Palm Beach County, Florida	CA 02-15005 AJ
Frankenmuth Mutual v Ronald Wright	Jan-04		MI	Circuit Court for the County of Emmet, Michigan	01-6803-NI
Gonzalez, Alfonso v Ford	Dec-03	Feb-04	TX	District Court 229th Judicial District, Duval County, Texas	DC-02-332
Castillo, Ezequiel v Ford	Dec-03		TX	District Court of Cameron County, Texas, 404th Judicial District	2003-01-251-G
Sasser, Kelsey v Ford	Nov-03 & Feb-04	Feb-04	GA	U S District Court for Middle District of Georgia Columbus Division	4 02-CV-802
Pollesche, Leslie v Ford	Nov-03		AZ	Superior Court of the State of Arizona In and For the County of Maricopa	CV2000-011238
Wilemon, Jeffrey v Ford	Nov-03		MS	U S District Court for the Northern District of Mississippi Eastern Division	1 02CV174-JAD
Parker, Patrick & Dena v Ford	Sep-03		TX	U S District Court for the Eastern District of Texas Marshall Division	2-02CV-182(DF)
Trimble v Ford	Aug-03		OK	District of Cleveland County, OK	CJ-2002-345(TL)
Phelan v DCC	Aug-03		CT	Superior Court Judicial District of Hartford	CV01-0805150-S
Thames v USAA	Jul-03		FL	Circuit Court for the 4th Judicial Circuit in and for Duval County, Florida	98-01324
Corona v Ford	Jun-03		TX	District Court 332 Judicial District Hidalgo County Texas	C-1350-01-F
Benton v Ford	Jun-03		OH	U S District Court Southern District of Ohio Western Division at Dayton	C-3-02-61
Bodoy v Ford	May-03		SC	U.S District Court for the District of South Carolina	202235318
Skene v State Farm	May-03		AZ	Superior Court of the State of Arizona In and For the County of Maricopa	CV 99-01053
Fisher v GM	Apr-03		WV	Circuit Court of Kanawha County, West Virginia	97-C-1144
Brymer v Ford	Apr-03		TX	District Court for the Eastern District of Texas Marshall Division	2 02-CV-155 (TJW)
Rodrigues, Roland v First Transit	Mar-03		TX	District Court of Harris County, Texas, 127th Judicial District	2001-34768
Williams, Dee v Ford	Mar-03		HI	Circuit Court of the Second Circuit State of Hawaii	01-1-0353(1)
Castro v Ford	Mar-03		TX	District Court 197th Judicial District	2002-04-555-C
Garcia, David v Ford	Mar-03		LA	6th Judicial Distrist Court of Louisiana, Parish of Madison	97-211
Wilkins, Stanley v Ford	Mar-03		OK	District Court of Oklahoma County	CJ-98-3669
Loose Class Action		Feb-03	KS	District Court of Johnson County, Kansas	01-CV07392
Collins, Stephanie v Ford	Feb-03		CA	Superior Court of the State of California for the County of Riverside	RIC 361201
Metrey, George v Ford	Feb-03		NJ	Superior Court of New Jersey	BER-L-3753-01
Tsapanikos, Chris v Ford	Feb-03		IL	District Court for the Northern District of Illinois Eastern Division	01C2566
Fiedler, Howard v Ford	Jan-03		FL	Circuit Court In and For Orange County, Florida	CI0-01-2674

Case Name	Date of Testimony		State	Court	Case No.
	Deposition	Trial/Hearing			
Comercial Bank v Ford	Jan-03		KS	District County of Neosho County, Kansas	00C35E
Sanders, Sherry v Ford	Dec-02		IL	Circuit Court of Cook County	98-L-4154
McMullen v Crown Equipment	Dec-02		PA	U S District Court for Eastern District of Pennslyvania	00-CV-1366
Jaramillo v Ford	Nov-02	Mar-03	WA	U S Court Western District of Washington at Tacoma	C01-5311 FDB
O'Halloran v Ford	Nov-02		FL	Circuit Court of the 15th Judicial Circuit In and For Palm Beach County, Florida	CA 01-08241 AN
Hardin, Jeffrey v Ford	Oct-02		TX	District Court of Orange County, Texas	10416
Banks, Kimberly v Ford	Oct-02		GA	State Court of Cobb County, State of Georgia	2000A
DiMaso v Ford	Oct-02		GA	State Court of Cobb County, State of Georgia	99A6172-6
Duhon, Sonya v Ford	Sep-02		TX	District Court of Jefferson County, Texas	E157171
Welsh, Kyle v Ford	Aug-02		TX	U S District Court for the Eastern District of Texas Marshall Division	2 01cv176-DF
Wright v Honda	Aug-02		MO	Circuit Court of Jackson County, Missouri at Kansas City	00-CV-202275
Jones, Jerry v Ford	Aug-02		TX	Probate Court Number One (1) of Travis County, Texas	74,600-A
Sanders, Terrell v Mazda	Aug-02		AL	Circuit Court of Jefferson County, Alabama	CV-00-7311
Martin, Laverne v Ford	Aug-02		AL	District Court of the U S for the Middle District of Alabama Northern Division	01-A-1138-N
Williams, Erma v Ford	Jul-02		TX	District Court for the Eastern District of Texas Marshall Division	201-CV-213
Grapsas v Ford	Jul-02		IL	District Court Northern District of Illinois Eastern Division	IP-01-C5299-B/S
Hobbs Class Action	Jun-02	Jul-03	IL	Circuit Court, Third Judicial Circuit of Illinois, Madison County	99-L-1068
Simon v DaimlerChrysler	Jun-02	Jan-03	MA	Commonwealth of Massachusetts, County of Middlesex Superior Court	MICV2000-01486
Richardson, Scott v GM	May-02	Nov-02	NC	U S District Court for the Middle District of North Carolina	1 01CV00394
Jernigan v GM	Apr-02	May-02	AL	Circuit Court for Bullock County, Alabama	CV-2000-104
Walden v Crown Equipment	Mar-02	May-02	TX	U S District Court Eastern District of Texas, Marshall Division	2-01CV118
Andrew, Vana v Ford		Mar-02	LA	Civil District Court, Parish of Orleans, State of Louisiana	92-13762
Winslow v GM	Mar-02		AR	U S District Court for the Eastern District of Arkansas	2-01-CV00 076 JMM
Cruz, Juan v Ford	Mar-02		AZ	Superior Court of State of Arizona, In and For the County of PIMA	C20006069
Kneeshaw, Don v Ford	Mar-02		OK	District Court of Tulsa County, State of Oklahoma	CJ-2000-2404
Tomasella, Stephen v GM	Mar-02		PA	U S District Court for the Eastern District of Pennsylvania	99-CV-4016
Arroyo v Ford		Feb-02	WV	U S District Court for the Southern District of West Virginia	2 99-0122
Zaborowski v Ford	Feb-02		NV	District Court, Clark County, Nevada	A420236
McCutchen v GM	Jan-02		GA	State Court of Troup County, State of Georgia	00-CS-306
LeBrilla v. Farmers Insurance	Jan-02		CA	Superior Court of the State of California In and for the County of Orange	00-CC-07185
Davis, William v. Ford	Jan-02		NV	U S District Court, District of Nevada	CVN000556HDMRAM
Robinson v Crown Equipment	Dec-01		AR	U S District Courut Eastern District of Arkansas, Helena Division	2 00CV-00211WRW
Pham v GM	Dec-01		TX	U S District Court Eastern District of Texas, Texarkana Division	599CV182
Sibley v Ford	Nov-01		TX	U S District Eastern Division of Texas, Marshall County	2-00CV213-DF
Bradford, Melissa v Ford	Nov-01 & Mar 02		TX	District Court, Titus County, Texas	28901
Gregory v Ford	Nov-01		WV	Circuit Court of OH County, West Virginia	00-C-1583
Kraft v Ford	Oct-01		TX	District Court, 271st Judicial District, Wise County	00-12-734
Burt v Ford	Oct-01		MI	Circuit Court for County of Livingstone	00-18101-NP
Morse v Ford	Oct-01		MO	Circuit Court of Jackson County, Missouri	00-CV 220638
Culleton, Alaina v Ford	Sep-01		FL	Circuit Court, 4th Judicial Circuit, In and For Duval County, Florida	2000-04634-CA
Sturdevant v Ford	Aug-01		NM	First Judicial District Court, County of Rio Arriba, State of New Mexico	RA 97-1318-C
Blossey v Ford	Aug-01		TX	Probate Court, Travis County, Texas	74, 671-A
Gozukara v Ford	Aug-01		CA	Superior Court of the State of California for the County of San Bernardino, Bartow Division	BCV 04203
Boryszewski v. DaimlerChrysler	Jul-01		NJ	Superior Court of New Jersey	HUD-L-9726-98
Moore v. Mazda	Jun-01		MS	Circuit Court of Leflore County, Mississippi	99-0136CI
Gonzalez, Mario v. Ford	Jun-01		TX	District Court 107th Judicial District Cameron County, Texas	2000-08-3598-A
Harris, Lawrence v Ford	Jun-01		NJ	Superior Court of New Jersey, County of Cumberland	GLO-L-1728-98
Snell v GEICO	Jun-01		MD	Circuit Court for Montgomery County, Maryland	202160
Davillier v. Bally's Louisiana	May-01		LA	Civil District Court, Parish of Orleans, State of Louisiana	97-13704
Thornton, Dudley v Ford	Apr-01		TX	U S District Court for the Eastern Distrist of Texas, Beaumont Division	1 99CV829
LillieMae Williams v Ford	Apr-01		FL	Circuit Court of the 13th Judial Circuit In and For Hillsborough County, Florida	97-001935

Case Name	Date of Testimony		State	Court	Case No.
	Deposition	Trial/Hearing			
Fuqua v Ford	Mar-01		MO	Circuit Court of Jefferson County, Missouri	CV199-3464-CC
Nelson, Gerry v Ford	Mar-01	May-01	NM	U S District Court for the First District of New Mexico, County of Rio Arriba	D-0117-CV-98-227
Parker, Yolanda v GM	Mar-01		NM	U S District Court for the First District of New Mexico	CIV-99-574 LCS
Bloemendaal v Honda	Mar-01		MI	Circuit Court for County of Lenawee	99-8273-NP
Fulton v Michelin	Mar-01	Apr-01	TX	U S District Court for the Northern District of Texas San Angelo Division	6 00-CV-045-C
Reynolds v Crown Equipment	Mar-01	Aug-01	TN	Circuit Court for Shelby County Tennessee, at Memphis	97528-9
Brown v Crown Equipment	Mar-01	Aug-01	TN	Circuit Court for Shelby County Tennessee, at Memphis	97528-9
Mohammed v Mazda	Feb-01		TX	U S District Court for the Eastern District of Texas, Marshall Division	2-99CV0231
Devore v Ford	Feb-01		KS	District Court of Cloud County, Kansas, 12th Judicial District	00-C-12
Seago v Ford	Jan-01		TX	District Court of Jefferson County, Texas	E-159,087
McLeod v Hyundai	Jan-01		GA	Superior Court of Clayton County	99-CV-4179-8
Bailey v Ford	Jan-01		TX	District Court of Nueces County, Texas	00-02303-A
Orsack v Crown Equipment	Dec-00	Jan-01	TX	District Court of Montgomery County	98-12-04331
Murphy v GEICO	Dec-00	Apr-01	FL	U S District Court, Southern District of Florida, Miami Division	00-0688-CIV-MOORE
Cost v Ford	Dec-00		GA	U S District Court for the Middle District of Georgia, Columbus Division	4 99-CV-86
Campbell v Ford	Dec-00		MS	Circuit Court of Jackson County, Mississippi	C1-99-0211(3)
Hogue and Hannah v Ford	Dec-00		TN	U S District Court for the Eastern District of Tennessee, Winchester Division	4 99-CV-80
Garcia, Israel v Ford	Jan-01, Nov-00		TX	District Court of Hidalgo County, Texas	C-4857-98-F
Pagan v Ford	Nov-00		LA	24th Judicial District Court, Parish of Jefferson, State of Louisiana	536-131
Reynoso v MBUSA		Nov-00	NJ	Superior Court of New Jersey, Passaic County	L-5662-97
Reeder v DaimlerChrysler	Oct-00	Nov-00	WV	Circuit Court of Wood County, West Virginia	99-C00422
Collard v Ford	Jun-00	Mar-01	TX	District Court Hunt County, Texas, 354th Judicial District	58942
Millsom v Ford	Apr-99	May-01	CA	Superior Court of the State of California for the County of San Bernardino	SCV41662
Ross v Ford	Jan-01, Dec-96	Jan-97	CA	Superior Court of the State of California for the County of Los Angeles (Central Divisio	111239